

REMARKS

The applicant respectfully requests reconsideration in view of the amendment and the following remarks. The applicant has amended claim 4 as suggested by the Examiner to overcome the objection to the claim. Support for the further feature that has been introduced into claim 11: the polymers are obtained by polymerization of monomers of formula (XXVI). This is disclosed on page 8, lines 26-30 of the specification. Support the other amended claims 1- 9, 12, 13 and 16 can be found in the original claims.

Claims 1-9 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Stern et al. (US Pat. 5,763,539) (“Stern”) as evidenced by Taylor et al., Substituted PPV’s for Blue Light (“Taylor”). Claims 11-13 and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stern as evidenced by Taylor. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stern as evidenced by Taylor as applied to claim 1, and further in view of Vanderzande et al. (US Pat. 6,936,683) (“Vanderzande”). Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stern as evidenced by Taylor as applied to claim 11, and further in view of Burroughes et al. (US 2003/0124341) (“Burroughes”). The applicant respectfully traverses these rejections.

35 USC § 103 Rejections

A. Claims 1-9

Claims 1-9 are rejected as being unpatentable over Stern as evidenced by Taylor. As the Examiner correctly stated, Stern teaches a process for preparing poly(arylenevinylenes) from a **halomethylsulfinylmethylarylene**. Stern do not teach a process for preparing poly-(arylenevinylenes) from a bis(halomethyl)arylene as is required by the applicant’s claimed invention.

“Halomethylsulfinylmethylarylenes” has been deleted from claims 1, 2 and 11. The applicant believes that neither Stern nor Taylor or a combination of both documents suggest adding a monomer of formula (I) in addition to a bis(halomethyl)arylene monomer in a Gilch polymerization to control the molecular weight of the polymer. Therefore, claims 1 to 9 are inventive over Stern as evidenced by Taylor. For the above reasons, this rejection should be withdrawn.

B. Claim 10

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stern as evidenced by Taylor as applied to claim 1, and further in view of Vanderzande. The applicant has cancelled claim 10. For the above reasons, this rejection should be withdrawn.

C. Claims 11-13 and 15-18

Claims 11-13 and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stern as evidenced by Taylor. Claim 11 now contain a further feature has been introduced: the polymers are obtained by polymerization of monomers of formula (XXVI).

Taylor discloses poly(phenylenevinylene) homopolymers, which are substituted on the vinylene groups with bulky side groups (see the definition of R and R' as hydrogen or a bulky side group). Copolymers wherein a part of the vinylene bonds are substituted and a further part of the vinylene bonds are unsubstituted are not disclosed. The same is true for Stern. Stern does not disclose copolymers wherein a part of the vinylene bonds are substituted and a further part of the vinylene bonds are unsubstituted.

The polymers of the claim 11, however, are copolymers, which contain units of formula (I) wherein the vinylene bonds in the polymer are substituted and furthermore contain units of

formula (XXVI) wherein the vinylene bonds in the polymer are unsubstituted. Therefore, claim 11 as well as the dependent claims 12, 13, and 15-18 is novel with respect to Stern as well as with respect to Taylor.

It is the object of the present invention to synthesize poly(arylenevinylene) polymers, which have a lower molecular weight and show a good solubility.

Taylor discloses homopolymers, which are substituted on the vinylene bond with a tert-butylphenyl group or with a methyl group (see page 1121). These polymers are synthesized via a precursor route. As advantage of this route it is stated that the finally obtained polymer can be insoluble. Already the precursor polymer (10) having methyl groups on the vinylene bonds is insoluble according to Taylor (see second col. 2, at page 1121). There is no information given with respect to the solubility of the resulting conjugated polymers having substituents on the vinylene bonds. However, the molecular weights have not been determined with the conjugated polymers (11), but with the non-conjugated precursor polymers. From this and from the fact that the solubility of conjugated polymers is in general worse than the solubility of the corresponding non-conjugated precursor polymer, the applicant believes that it can be concluded that the resulting conjugated polymers are not sufficiently soluble for gel permeation chromatography. Therefore, the applicant believes that Taylor discloses polymers with lower molecular weight. However, these polymers are insoluble. Therefore, these polymers are not solution processable and they are therefore no solution for the technical problem of the present invention. In particular, Taylor does not teach how soluble polymers could be obtained. In contrast, the object of the experiments of Taylor was the synthesis of insoluble polymers for the production of multilayer devices.

The same is true for Stern. Stern discloses a process for preparing poly(arylenevinylenes) from a halomethylsulfinylmethylarylene wherein the vinylene bonds of the polymer can in

principle be substituted and wherein the polymers can be homopolymers or copolymers. There are no explicit examples given wherein the vinylene bonds of the polymers are substituted. Therefore, the applicant believes that no information can be obtained on the molecular weight and the solubility of polymers with substituted vinylene bonds in comparison to polymers with unsubstituted vinylene bonds.

Also the combination of Stern with Taylor would not lead a person of ordinary skill in the art to the present invention as the person skilled in the art knows from Stern only that in principle it might be possible to synthesize poly(arylenevinylene) polymers with substituted vinylene bonds, but he also knows from Taylor that polymers wherein all vinylene bonds are substituted are insoluble. He would therefore not be tempted to synthesize polymers wherein one part of the vinylene bonds is substituted whereas the rest of the vinylene bonds are unsubstituted when looking for a solution of his technical problem.

In contrast, the inventive polymers according to claim 11 have a good solubility and can therefore be processed from solution as can be seen from Table 1 of the present patent application. For the above reasons, this rejection should be withdrawn.

D. Claim 18

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stern as evidence by Taylor as applied to claim 11, and further in view of Burroughes. Claim 18 further requires the features of claim 11. As stated above, claim 1 is not rejectable under 35 U.S.C. 103(a) as being unpatentable over Stern as evidenced by Taylor. Burroughes does not cure the deficiencies of Stern as evidenced by Taylor and therefore this rejection should be withdrawn.

In view of the above amendment, applicant believes the pending application is in condition for allowance. No additional fee is due. Applicant believes no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 03-2775, under Order No. 14113-00028-US from which the undersigned is authorized to draw.

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Respectfully submitted,

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